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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,082	04/08/2004	Michael G. Polan	CA920030071US1	1136
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EXAMINER GREENE, JOSEPH L				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,082

Applicant(s)

POLAN, MICHAEL G.

Examiner

JOSEPH L. GREENE

Art Unit

2451

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 12-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 12-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6) <input checked="" type="checkbox"/> Other: <u>Google Search History, Google Search History 2, SolvingNBodyProblem</u></p> |
|---|---|

DETAILED ACTION

1. Claims 1 – 23 are currently pending in this application.
2. Claims 1, 3, 12, and 13 are amended as filed on 10/21/2008.
3. Claims 6 – 11 are canceled as filed on 10/21/2008.
4. Claims 19 – 23 are new as filed on 10/21/2008.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. **Claims 1-5 and 12 are rejected under 35 U.S.C. 101, as the claims are directed towards non-statutory subject matter.**
7. With respect to claim 1, it contains the limitation **"a manager for use in a system of grid computing comprising a processor operable to define a computing task based on data received by said processor."** A processor can be implemented as both hardware and software. Furthermore, the applicant's specification describes only steps that can be conducted as software implementation. Thus, evidence is provided that shows the system as being directed towards both hardware and software

per se, which is not one of the statutory categories of invention. Also, claims 2-5 are dependent upon claim 1 and are thus, also rejected.

8. With respect to claim 12, it contains the limitation **"a manager operable to define a computing task and assign a portion of said task to each of a plurality of clients connected to said manager via a network."** The applicant's specification states that a manager is **"In an aspect of the present invention there is provided a manager for use in a system of grid computing. The manager can be a computing device, such as a server, that comprises a processor that is programmed to render the manager operable to define a computing task based on data received by the processor."** However, the specification fails to define the manager as being a hardware implementation. Thus, evidence is provided that the manager is directed towards both hardware and software per se, which is not one of the statutory categories of invention.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

11. With respect to claim 19, it contains the limitation "**each portion relates to not more than one body and comprises data corresponding to the body.**" However, it is unclear to what body the claim is definitively pointing towards. For example: Does the body represent an individual body from one of the n-bodies. Does the body refer to one individual task body. For examination purposes, the body will be treated as referring to a body of work that is partitioned into individual pieces.

12. As for claims 20-23, they are dependent upon claim 19 and are thus, also rejected.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. **Claims 1-5, 12-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. (Solving the N-Body Problem with the ALICE Grid System), hereinafter Ho, in view of Neiman et al. (Pre-Grant Publication No. US 2003/0237084 A1), hereinafter Neiman.**

15. With respect to claim 1, Ho taught a manager for use in a system of grid computing comprising a processor operable to define a computing task based on data

received by said processor, said processor further operable to assign a portion of said task to each of a plurality of clients connected to said manager via a network (section 3.1, lines 1-9, where the resource broker is a manager), each of said plurality of clients configured to produce a result by performing a computation using said portion (section 3.1, lines 10-12), but Ho did not explicitly state said processor further operable to approximate said result of performing said computation using said portion when said client fails to return said result to said manager, wherein said processor is configured to determine a client failure to return said results based upon at least one condition selected from a group of conditions consisting of: a receipt of a message indicating that the client is no longer connected to the network, a receipt of a message from the client indicating that said result is not forthcoming, and an expiration of a previously defined time delay for said client to provide said result.

However, Neiman did teach said processor further operable to approximate said result of performing said computation using said portion when said client fails to return said result to said manager (0126, lines 14-22, where the new node creating results based on the intermediate portions of data that were returned by the failed node is approximating the results that would have been produced by the failed node), wherein said processor is configured to determine a client failure to return said results based upon at least one condition selected from a group of conditions consisting of: a receipt of a message indicating that the client is no longer connected to the network, a receipt of a message from the client indicating that said result is not forthcoming, and an expiration of a previously defined time delay for said client to provide said result (0111,

lines 1-10, where this shows the receipt of a message from the client indicating that said result is not forthcoming limitation).

Both the systems of Ho and Neiman are directed towards systems of grid computing and therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to combine the teachings of Ho, to utilize failure measures, as taught by Neiman, in order to maintain efficiency within the system.

16. As for claim 2, the combination of Ho and Neiman taught all of the limitations described in claim 1. In addition, Ho taught wherein said task is one of a plurality of repeatable operations (section 3.1, where the consumer may send the same operations as many times as deemed necessary), and Neiman taught said task including a plurality of sub-operations, wherein one of said sub-operations is said portion for which said manager approximates the result, and wherein said approximation of said portion introduces a predefined accepted level of error to a performance of said task (0126, lines 14-22 and 0044, lines 1-12, where the acceptable level of error is zero).

17. As for claim 3, the combination of Ho and Neiman taught all of the limitations described in claim 1. In addition, Ho taught computations being multi-cycled computations (section 1, lines 6-7, where by the nature of N-Body problems, multi-cycle computations are being conducted), and Neiman taught wherein said result is a result of a computation, wherein an approximation of said result is based at least in part upon

at least one previous result received from said client that failed to return said result (0126, lines 14-22).

18. As for claim 4, the combination of Ho and Neiman taught all of the limitations described in claim 1. In addition, Ho taught wherein said task is an n-body type problem (section 1, lines 6-7), and Neiman taught wherein a programmatic decision by the manager as to whether to approximate said result when said client fails to return it or whether to re-execute said task to generate said result is made based upon whether a computed degree of error computed for approximating said result exceeds a previously defined threshold for an acceptable degree of error during approximations (Approximating Results: 0126, lines 14-22, where the new node creating results based on the intermediate portions of data that were returned by the failed node is approximating the results that would have been produced by the failed node. Re-Executing: 0014, lines 8-11).

Neiman's system utilizes the method of approximating data and Neiman also disclosed that the method of re-executing was well known in the art. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention, to modify the teachings of Neiman to utilize both the novel and well known methods in the art to accomplish the goal of efficient workflow of the system.

19. As for claim 5, the combination of Ho and Neiman taught all of the limitations described in claim 4. In addition, Ho taught wherein said n-body type problem is performed using the Barnes-Hut operation (section 2, all).

20. With respect to claims 12 and 13, Ho taught a system of grid computing comprising: a manager operable to define a computing task based on data received by said processor, said processor further operable to assign a portion of said task to each of a plurality of clients connected to said manager via a network (section 3.1, lines 1-9, where the resource broker is a manager), each of said plurality of clients configured to produce a result by performing a computation using said portion (section 3.1, lines 10-12), but Ho did not explicitly state said processor further operable to approximate said result of performing said computation using said portion when said client fails to return said result to said manager, wherein said processor is configured to determine a client failure to return said results based upon at least one condition selected from a group of conditions consisting of: a receipt of a message indicating that the client is no longer connected to the network, a receipt of a message from the client indicating that said result is not forthcoming, and an expiration of a previously defined time delay for said client to provide said result.

However, Neiman did teach said processor further operable to approximate said result of performing said computation using said portion when said client fails to return said result to said manager (0126, lines 14-22, where the new node creating results based on the intermediate portions of data that were returned by the failed node is

approximating the results that would have been produced by the failed node), wherein said processor is configured to determine a client failure to return said results based upon at least one condition selected from a group of conditions consisting of: a receipt of a message indicating that the client is no longer connected to the network, a receipt of a message from the client indicating that said result is not forthcoming, and an expiration of a previously defined time delay for said client to provide said result (0111, lines 1-10, where this shows the receipt of a message from the client indicating that said result is not forthcoming limitation).

Both the systems of Ho and Neiman are directed towards systems of grid computing and therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to combine the teachings of Ho, to utilize failure measures, as taught by Neiman, in order to maintain efficiency within the system. Furthermore, Neiman taught wherein a programmatic decision by the manager as to whether to approximate said result when said client fails to return it or whether to re-execute said task to generate said result is made based upon whether a computed degree of error computed for approximating said result exceeds a previously defined threshold for an acceptable degree of error during approximations (Approximating Results: 0126, lines 14-22, where the new node creating results based on the intermediate portions of data that were returned by the failed node is approximating the results that would have been produced by the failed node. Re-Executing: 0014, lines 8-11).

Neiman's system utilizes the method of approximating data and Neiman also disclosed that the method of re-executing was well known in the art. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention, to modify the teachings of Neiman to utilize both the novel and well known methods in the art to accomplish the goal of efficient workflow of the system.

21. as for claim 14, the combination of Ho and Neiman taught all of the limitations described in claim 13. In addition, Ho taught wherein said task is one of a plurality of repeatable operations (section 3.1, where the consumer may send the same operations as many times as deemed necessary), and Neiman taught said task including a plurality of sub-operations, wherein one of said sub-operations is said portion for which said manager approximates the result, and wherein said approximation of said portion introduces a predefined accepted level of error to a performance of said task (0126, lines 14-22 and 0044, lines 1-12, where the acceptable level of error is zero).

22. As for claim 15, the combination of Ho and Neiman taught all of the limitations described in claim 14. In addition, Neiman taught wherein in absence of said manager approximating the result, said task would situation-ally have to be restarted and all of said sub-operations performed by said plurality of clients be repeated (0014, lines 8-11).

23. As for claim 16, the combination of Ho and Neiman taught all of the limitations described in claim 14. In addition, Ho taught wherein said task is an n-body problem (section 1, lines 6-7).

24. As for claim 17, the combination of Ho and Neiman taught all of the limitations described in claim 16. In addition, Ho taught wherein said n-body type problem is performed using the Barnes-Hut operation (section 2, all).

25. As for claim 18, the combination of Ho and Neiman taught all of the limitations described in claim 13. In addition, Ho taught wherein said task is selected from the group consisting of determining a) movements of masses in a given space; b) charges of particles; c) electromagnetic fields; d) fluid dynamics in a fluid system; e) weather patterns; f) equity fluctuations in financial markets; and g) movements of objects in multi-player games (section 1, lines 6-7, where this shows the masses in a given space limitation).

26. With respect to claim 19, Ho taught a method for grid computing, comprising: dividing a computing task into a plurality of portions (section 3.1, lines 1-9, where the resource broker is a manager), wherein the computing task relates to an n-body type problem (section 1, lines 6-7), each portion relates to not more than one body and comprises data corresponding to the body (section 3.1, lines 1-9, where the body is broken into individual pieces); assigning the plurality of portion to a plurality of clients,

wherein at least one portion is assigned to each of the plurality of clients (section 3.1, lines 9-12), each of the plurality of clients connected to a network (abstract, where this system is a network); processing the plurality of portions at the plurality of clients, wherein each client of the plurality of clients is configured to compute a result of the body for each portion assigned to the client based upon the data corresponding to the body (section 3.1, lines 1-12, where the data transferred is for the body of work and is thus corresponded to the body); compiling results computed by the plurality of clients for each of the plurality of portions (section 3.1, lines 1-9); repeating the dividing, assigning, processing, and compiling in iterative cycles until the computing task is finished section 3.1, lines 1-9, and section 1, lines 6-7, where by the nature of solving an n-body problem, there will be many iterative cycles of the moving particle).

However, Ho did not explicitly state that the system, while repeating, failing to receive results from at least one client of the plurality of clients; in response to failing to receive results from the at least one client, using a previous result produced by the at least one client during a previous cycle in compiling results for a present cycle. On the other hand, Neiman did teach that the system, while repeating, failing to receive results from at least one client of the plurality of clients; in response to failing to receive results from the at least one client, using a previous result produced by the at least one client during a previous cycle in compiling results for a present cycle (0111, lines 1-10, where this shows the receipt of a message from the client indicating that said result is not forthcoming limitation). Both the systems of Ho and Neiman are directed towards systems of grid computing and therefore, it would have been obvious to a person of

ordinary skill in the art, at the time of the invention, to combine the teachings of Ho, to utilize failure measures, as taught by Neiman, in order to maintain efficiency within the system.

27. As for claim 20, the combination of Ho and Neiman taught all of the limitations described in claim 19. In addition, Ho taught wherein assigning the plurality of portions comprising assigning multiple of the plurality of portions to at least one client of the plurality of clients (section 3.1, lines 9-12).

28. As for claim 21, the combination of Ho and Neiman taught all of the limitations described in claim 19. In addition, Ho taught wherein the dividing and assigning are performed by a manager (Section 3.1, lines 1-12, where the resource broker is a manager), and Neiman taught it being in response to failing to receive results from the at least one client, alternatively computing the results at the manager for a present cycle (0126, lines 14-22, where the new node creating results based on the intermediate portions of data that were returned by the failed node is approximating the results that would have been produced by the failed node).

29. As for claim 23, the combination of Ho and Neiman taught all of the limitations described in claim 19. In addition, Neiman taught wherein upon a client failing to return results over a predefined number of cycles, reassigning the at least one portion assigned to the client to at least one other client (0126, lines 14-22).

30. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho, in view of Neiman, and in further view of Official Notice.

31. As for claim 22, the combination of Ho and Neiman taught all of the limitations described in claim 19. However, the combination of Ho and Neiman did not explicitly state wherein failing to receive results is determined by either receiving a message from equipment which operates the network that the client is no longer connected to the network or an expiration of a previously defined time delay for the client to provide the result. However, the examiner gives official notice that determine failure by the methods of timing out of a node or the system recognizing a disconnect is well known and practiced in the art and therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to modify the system of the combination of Ho and Neiman, to detect node disconnect and failures as a basic way or error handling.

Response to Arguments

32. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH L. GREENE whose telephone number is (571)270-3730. The examiner can normally be reached on Monday - Thursday from 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLG

/John Follansbee/

Supervisory Patent Examiner, Art Unit 2451

